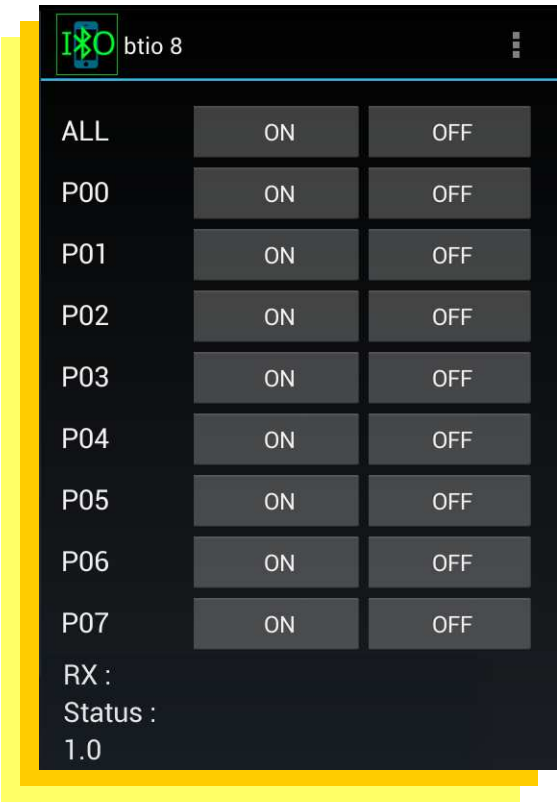
smartphone I/O

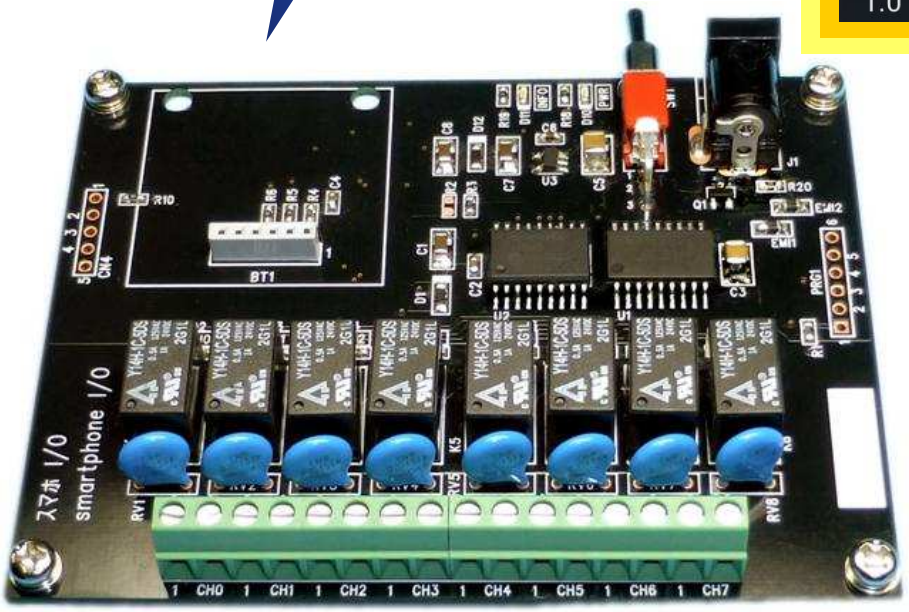
8 channel evaluations version

SBTIO-08

User's manual



Bluetooth®



* The photograph is under development.

Sankoudenshi Inc.

CONTENTS

CONTENTS 2

CHARACTERISTIC OF THE PRODUCT 3

DEVICES TO PREPARE 3

NAME AND FUNCTION OF EACH PARTS 4

HOW TO USE 5

THE FIRST PREPARATIONS 5
HOW TO USE THE SMARTPHONE APPLICATION 6
Recognition of the Bluetooth *6*
Start smartphone application "btio 8" *7*
INSTALL HARDWARE 8
How to connect terminal *8*
Internal circuit *8*
Connection example *8*

SPECIFICATIONS 9

SPECIFICATIONS OF THE HARDWARE 9
SPECIFICATIONS OF THE COMMAND 9

DISCLAIMERS 10

WARRANTY 10

COPYRIGHT 10

TRADE MARK 10

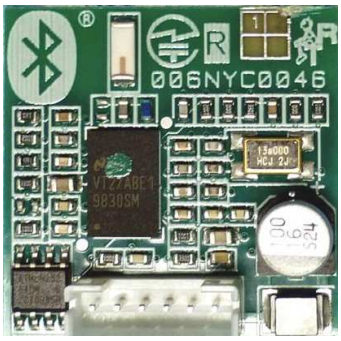
ATTENTION IN THE SAFETY 11

Characteristic of the product

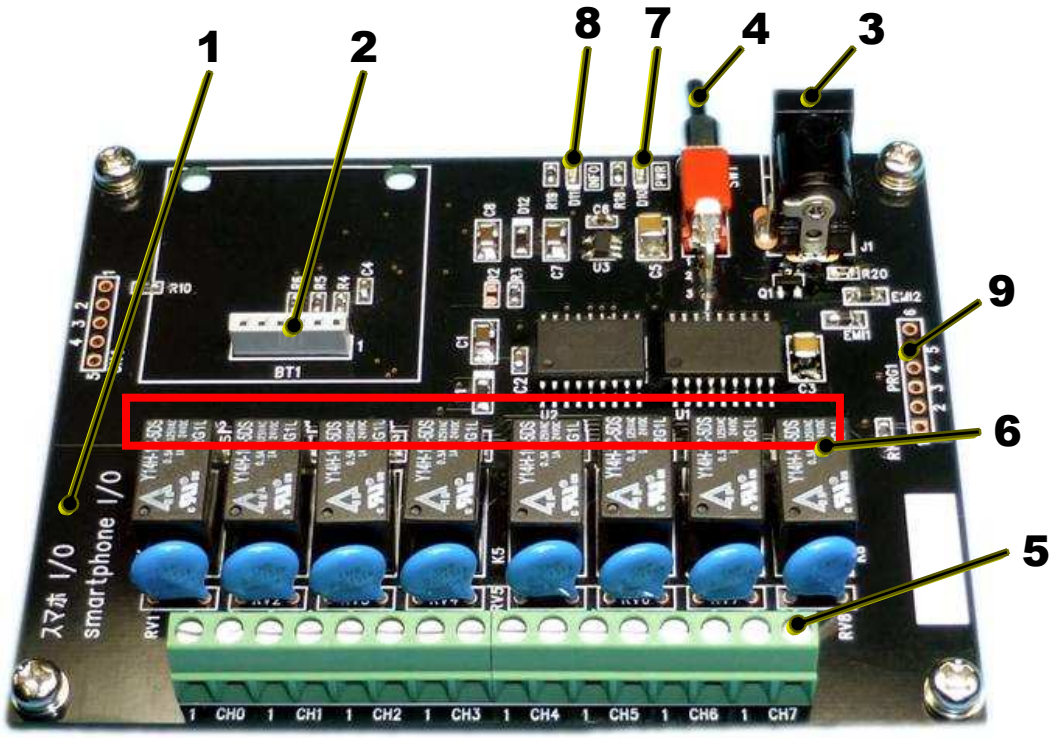
You can do it in the ON/OFF of various electronic devices with a Bluetooth-based smartphone easily by radio.
Wireless remote controller BT IO for evaluations is free from Google Play, and downloading is possible.

Devices to prepare

The things which you prepare are as follows.

Name	Details
Smartphone	It supports Bluetooth version after 2.1
Bluetooth module	ROBOTECH-RBT-001 The store which you can purchase, example, Switch Science Please confirm setting as follows. 9600bps, Parity none, start 1bit, stop 1bit 
AC adapter	Please prepare a stabilized AC adapter more than 500mA at 5V. Center plus: The diameter outside is φ5.5mm, inside is φ2.1mm Recommended AC adapter： 5V1A GP05-US0510 AKIZUKI DENSHI TSUSHO CO.,LTD.
Others	A flat-head screwdriver for connection, an AC outlet are necessary. Please prepare electronic load and a power supply, the connection cord which you want to control as needed.

Name and function of each parts



*The photograph is under development.

	Name	Details
1	Board	SBTIO-08 Control board 95x72mm It is Akizuki denshi universal B type and of the same size.
2	Bluetooth board	Bluetooth board on the market. Conformity module:ROBOTECH-RBT-001（Other selling）
3	DC Jack	Center plus: The diameter outside is φ5.5mm, inside is φ2.1mm
4	Power switch	Power switch is toggle switch, and, put it up, it is switched on.
5	Connection terminal	Point of contact control connection terminal. It is a screw-type terminal.
6	Relay operates lamp	These displays are operating relay with LED.
7	Power indicator	Green LED turns on during electricity.
8	The lamp in an internal state	It display a communication state.
9	Program terminal	It is used for the program of the microcomputer in the control board. It is usually connected nothing.

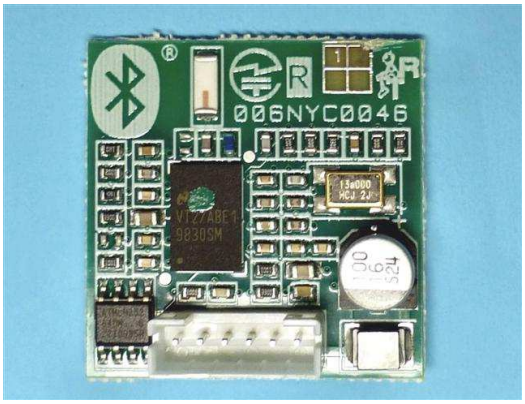
How to use

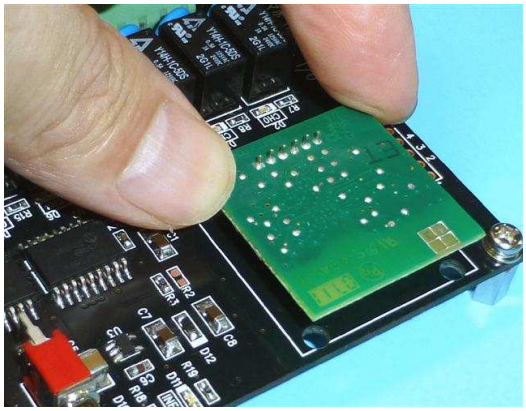
The first preparations

Search “ainago btio” from Google Play and install it.

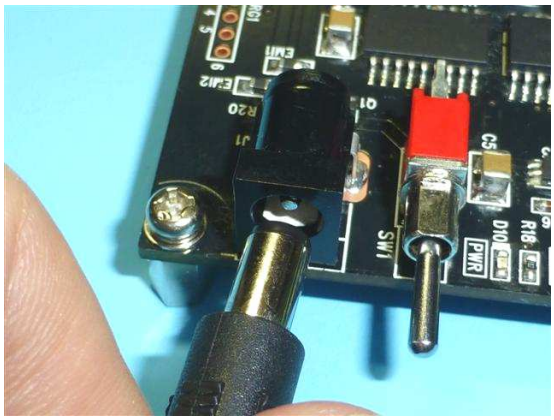
You install it only once.

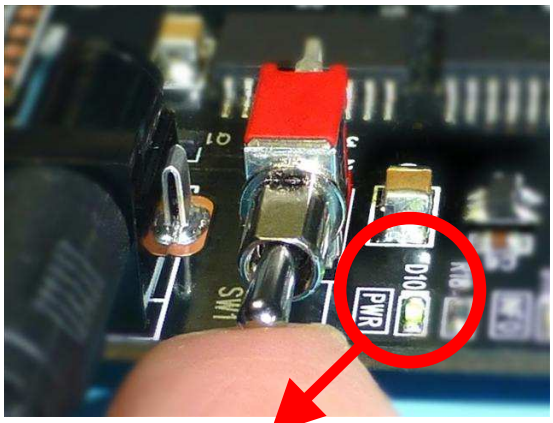
Install Bluetooth module





Insert an AC adapter in DC Jack, and power is on.





Connect the AC adapter to an outlet.

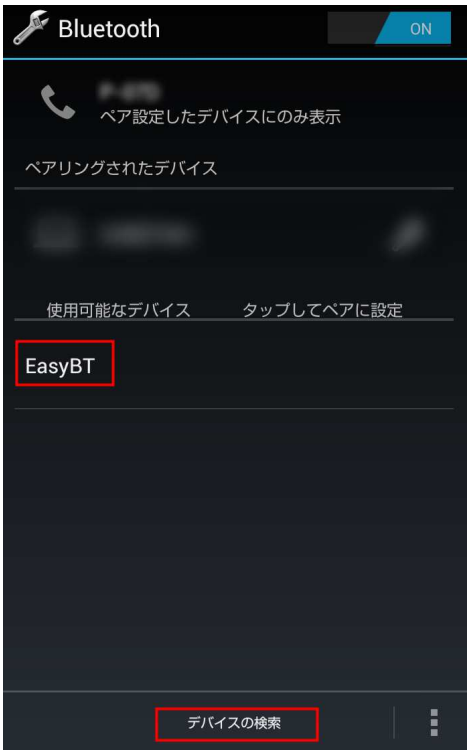
Please operate a power supply with the power switch on the board

The re-operation, please leave the intervals more than one second.

How to use the smartphone application

Recognition of the Bluetooth

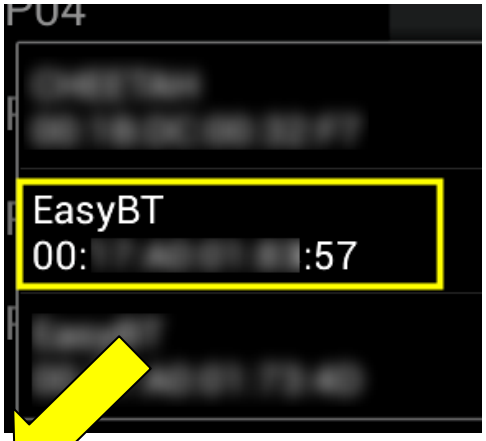
Search Bluetooth devices, and input a pass key; and pairing.



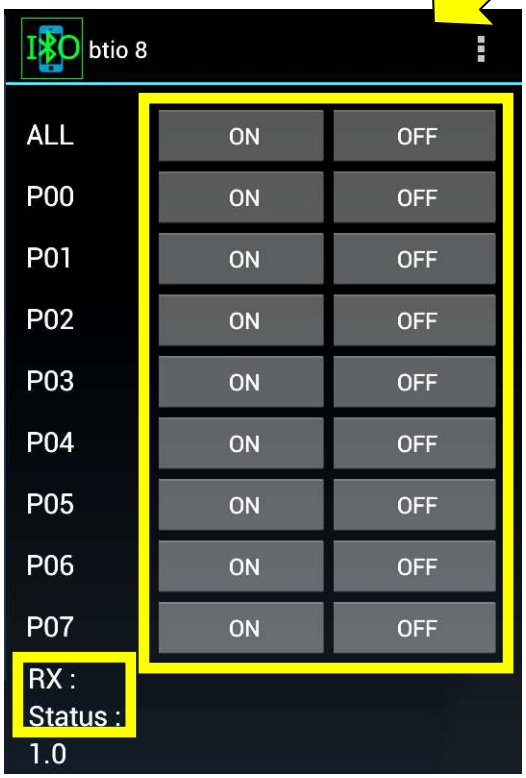
The pair setting of Bluetooth is performed pairing of once by performing it.

Start smartphone application “btio 8”

Tap here 1 then 2



Tap here,
Connection is finished.



You can confirm connection.

Let's confirm that you tap it, and a relay sound a sound.
The operation LED shines, too!

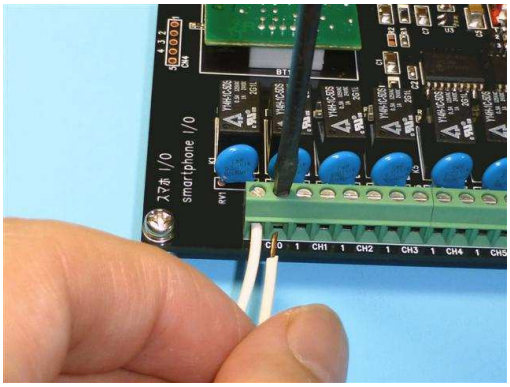
Because you may vary according to a model, please confirm the setting of the smartphone with the manuals.

There is possibility of the change in the smartphone application without a notice for improvement. About the detailed usage, look at helps of the application.

The photo was taken when the product was still under development. The actual product may look different.

Install hardware

How to connect terminal

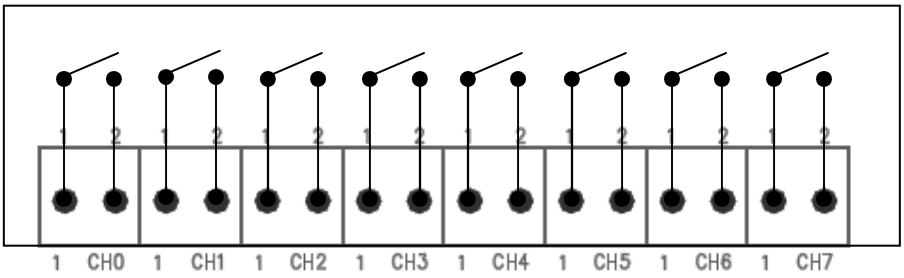


Item	Standard
Terminal maker	OMRON　XW4E series
Connection wire range	AWG26～AWG16 strand wire
Length to peel a wire	5mm ±1mm
Tightening torque	0.22～0.25N･m
Recommended flat-head screwdriver	OMRON XW4Z-00B

Please perform the connection after switching it off by all means.

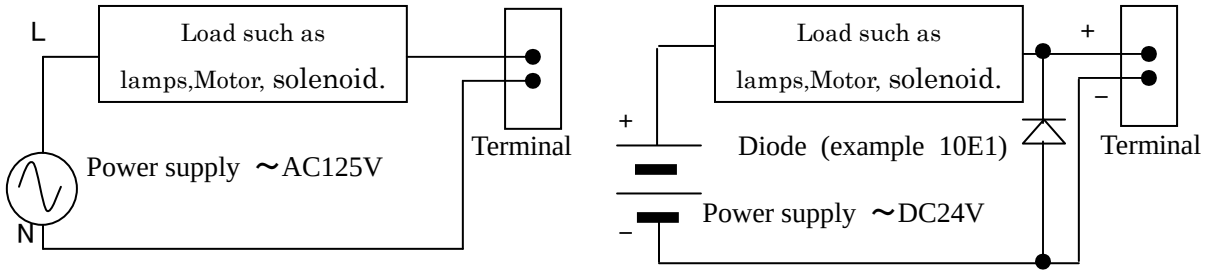
Internal circuit

Channel 0-7 relay supports every two terminals.
The maximum point of contact capacity is AC125V0.5A or DC24V1A.



Please use it without exceeding maximum point of contact capacity.

Connection example



In the case of DC drive, we recommend that you attach diodes.

Specifications

Specifications of the hardware

Item	Standard Rating
Trade name	SBTIO-08 smartphone I/O control board 8 channel evaluations version
The use voltage, and current	DC5V minmum 20mA, At the time of Bluetooth use 40mA, At the time of all relays use 220mA.
Size	95x72mm 1 Height under 5mm The hole position is equal to Akizuki B board.
Weight	Under 80g
Operating temperature	0 to 45 degree Celsius (Do not condense)
Use microprocessor	PIC16F1827-I/SO or PIC16F628A-I/SO or Equivalency product.
Conformity Bluetooth module	ROBOTECH-RBT-001
Contact output standard	Contact numbers：8 Contact capacity Max：AC125V0.5A, or DC24V1A
Communication standard	9600bps, Parity none, start 1bit, stop 1bit 8bit data

Specifications of the command

Command	Message	Return data
Turn on an applicable channel	+0[CR],+1[CR] ～ +7[CR]	*[CR]
Turn off an applicable channel	-0[CR],-1[CR] ～ -7[CR]	*[CR]
Turn on an all channels	+z[CR]	*[CR]
Turn off an all channels	-z[CR]	*[CR]
Get a channel state	?p[CR]	{four digit hexadecimal number}*[CR] Return operating port by four digit hexadecimal number. Example）In the case of Channel 0,1,4,7 are on Calculate an applicable channel as 1 bit Channel ：7654 3210 In operation ：1001 0011 Return data ：0093*[CR]
Firmware version of the board	?v[CR]	{version}*[CR] Example） 0.03*[CR]
Response of board	?q[CR]	*[CR]
The number of the maximum operation ports	?w[CR]	7*[CR] ：8 ports of 0-7
Expect for the command	Expect for above [CR]	?[CR] （Error lamp lighting）

* [CR] is 0x0d

For improvement, we may change specifications without a notice.

Disclaimers

We may change the contents of this book without a notice due to performance enhancements.

About the contents of this book, we made it by the system named all possible measures, but, please contact me about our imperfect point and aware point including the error by any chance. Because you cannot take responsibility for all in us when the economical damage of the data origin that We were not able to perform communication by noises such as the malfunction of the main body, malfunction and a power supply stop, the static electricity normally and produced is accompanied, please use the cause of enough inspection and measures in the visitor side. We do not turn in the use that the economic influence such as using the main body for a vital apparatus of the human body such as the medical care or electricity facilities uses to extremely high facilities. In addition, thank you for your understanding beforehand when it is spent for those uses because we do not bear all of the responsibility. About the temperature compensation, we define the range as a result of experiment and part document enough examination, but the examination for temperature at the time of the shipment does not go.

When you discard the main body, please talk about whether you handle it by the method based on the cities, towns and villages ward local government of the neighborhood to us.

About the applications software, we offer evaluation copy gratis, but do not do the individual correspondence such as bugs of the software. In addition, the duty of the version up does not occur, too. Because we do not perform it with the model of all smartphones, malfunction may produce the operation check on the smartphone for movement in a specific model.

Warranty

We cannot do the warranty when Product is remodeled.

The movement warranty of this device is only Japan. A warranty by use of foreign countries isn't done at all.

Copyright

As for the contents of this book, "Sankoudenshi Inc." owns writing. Therefore, it is firm to reprint a part of these contents and all without permission by any copying means including a copier and the electronic method and declines it.

(C) 2013 Sankoudenshi Inc. ALL RIGHTS RESERVED

TRADE MARK

スマホI／O is registered trademarks of the Sankoudenshi Inc. *Trademark pending. (No. 2013-054015)

smartphone I/O is registered trademarks of the Sankoudenshi Inc. *Trademark pending.(No. 2013-054016)

The product name group used in explanation in this instruction manual is the trademark of the companies and a registered trademark. I omit TM (™) and the C (©) mark of the text.

Attention in the safety

Please be sure to read.

We explain that we have you look after it by all means as follows to prevent a person and the harm to other people, the damage to property using.

WARNING	**A COLUMN OF THIS INDICATION IS THE CONTENTS THAT "POSSIBILITY TO SUFFER THE DEATH OR A SERIOUS WOUND IS ASSUMED".**
ATTENTION	**A COLUMN OF THIS INDICATION IS THE CONTENTS THAT "POSSIBILITY TO BEAR AN INJURY OR THE POSSIBILITY THAT ONLY THE MATERIAL DAMAGE OCCURS IS ASSUMED".**

We sort the kind of the contents which I will look after by the next picture indication and explain it.（Follows are an example of the picture indication）

	Such a picture indication is “**ATTENTION AWAKENING**” contents to want you to be careful.
	Such a picture indication is the “**PROHIBITION** “ contents that you must not do.
	It is ”**COMPULSION** “ contents to have you carry out such a picture indication by all means.

WARNING

Contact prohibition	DO NOT TOUCH IT CARELESSLY IN THE BACK OF THE BOARD. If thunder sounds, do not touch an apparatus, the power supply plug. It causes the electric shock.
	Do not give damage to power supply cord, a power supply plug. Do not injure it and process it and bring it close to heat appliances and bend it forcibly and twist it and pull it and pick up a heavy thing and do not bundle it up.
Wet hand prohibition	By a wet hand, do not place the omission of the power supply plug. It causes the electric shock.
	Do not use except the rating power supply voltage of how to use more than the rating outlet and wiring appliance and the AC adapter. It causes the fire due to the fever when you surpass rating in octopus-like legs wiring.
	Do not put a metal item in the device inside and do not take water and do not get it wet. By short-circuits and fever, it causes a fire and the electric shock. Please do not put a container with the liquid and metal item on an device. Please warn in particular child.
	Please insert a power supply plug surely to the root. If a plug is incomplete, it causes the fire due to an electric shock and the fever. Please do not use the damaged plug, outlet having loose.
	Please take the dust of the power supply plug regularly. When dust collects to the plug, it becomes the bad insulation by moisture and causes the fire. Disconnect the plug, and, please blow with dry cloth. Please disconnect the plug for a long term when you do not use it.

WARNING

Pull a power supply plug out of an outlet.	Disconnect the plug at following case. * When metal and water, an alien substance were in the device inside. * When smoke and a bad smell, abnormal noise came out and dropped and were damaged. It causes a fire and the electric shock when you just use it.
	Take the dust of the power supply plug regularly. When dust collects to the plug, it becomes the bad insulation by moisture and causes the fire. Disconnect the plug, and, please blow with dry cloth. Please disconnect the plug for a long term when you do not use it.

ATTENTION

About setting, connection	
	Do not put the device in the place with much moisture and dust. Do not put the device in the place where the oil smoke and the steam are.
	Do not put the device in the place where temperature abnomally rises. The device surface and a part deteriorate and may cause the fire. Be careful in particular in the place where the direct rays of the sun is, near the stove.
	Do not put the device in the unstable place. Do not put a big thing, a heavy thing on the top. The device falls and falls down and may cause the injury.

About use	
am careful about fingers	Do not touch it carelessly in the back of the board. Because lead parts stick out for the backside of the board, you might be hurt.
	Do not ride on the board. You might be hurt with the part of the board.

SBTIO-08 smartphone I/O 8 channel evaluations version　User's manual

Sankoudenshi Inc.

(C) 2013 Sankoudenshi Inc. ALL RIGHTS RESERVED

http://www.sankode.com

First edition（July,23,2013）